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Database:

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DATE: Thursday, April 11, 2002 [Printable Copy](#) [Create Case](#)

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 result set

DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR

<u>L10</u>	L6 and l9	15	<u>L10</u>
<u>L9</u>	((707/5)!.CCLS.)	813	<u>L9</u>
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<u>L7</u>	((707/1 707/2 707/3)!.CCLS.)	3319	<u>L7</u>
<u>L6</u>	L5 and (least same value or lesser value)	79	<u>L6</u>
<u>L5</u>	L4 and find\$ same great\$ same value	79	<u>L5</u>
<u>L4</u>	((707/3)!.CCLS.)	1694	<u>L4</u>
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<u>L1</u>	((382/229)!.CCLS.)	410	<u>L1</u>

END OF SEARCH HISTORY

WEST

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Cases

79

Refine Search

4/11/02 11:03 AM

WEST

Generate Collection

Print

L6: Entry 21 of 79

File: USPT

Sep 12, 2000

US-PAT-NO: 6119120

DOCUMENT-IDENTIFIER: US 6119120 A

TITLE: Computer implemented methods for constructing a compressed data structure from a data string and for using the data structure to find data patterns in the data string

DATE-ISSUED: September 12, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Miller; John W.	Kirkland	WA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Microsoft Corporation	Redmond	WA			02

APPL-NO: 8/ 673427 [PALM]

DATE FILED: June 28, 1996

INT-CL: [7] G06 F 17/30

US-CL-ISSUED: 707/101; 707/6, 707/7, 707/3

US-CL-CURRENT: 707/101; 707/3, 707/6, 707/7

FIELD-OF-SEARCH: 382/229, 382/230, 382/231, 707/6, 707/3, 707/7, 707/101, 707/2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL



5459739

October 1995

Handley et al.

371/136

OTHER PUBLICATIONS

"Dynamic Programming Alignment of Sequences Representing Cyclic Patterns", by Jens Gregor and Michael G. Thomason, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 15, No. 2, pp. 129-135, Feb. 1993.

"Searching Genetic Databases on Splash 2", by Dzung T. Hoang, Proceedings IEEE Workshop on FPGAs for Custom Computing Machines (Cat. No. 93TH0535-5), pp. 185-191, Apr. 5, 1993.

"Rapid-2, An Objecti-Oriented Association Memory Applicable to Genome Data Processing", by Denis Archambaud, Pascal Faudemay, and Alain Greiner Proceedings of the Twenty-Seventh Annual Hawaii International Conference on System Sciences, pp. 150-159, Jan. 1994.

"A Faster Algorithm Computing String Edit Distances", William J. Masek and Michael S. Paterson, Journal of Computer and System Sciences, 20, pp. 18-31, Aug. 6, 1979.

"Synthesis and Recognition of Sequences", by S.C. Chan and A.K.C. Wong, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 13, No. 12, pp. 1245-1255, Dec. 1991.

"Efficient Systolic String Matching", by G.M. Megson, Electronic Letters, vol. 26,

No. 24, pp. 2040-2042, Nc 1990.

ART-UNIT: 273

PRIMARY-EXAMINER: Au; Amelia

ASSISTANT-EXAMINER: Frederick, II; Gilberto

ATTY-AGENT-FIRM: Lee & Hayes, PLLC

ABSTRACT:

A method for constructing a data structure for a data string of characters includes producing a matrix of sorted rotations of the data string. This matrix defines an A array which is a sorted list of the characters in the data string, a B array which is a permutation of the data string, and a correspondence array C which contains correspondence entries linking the characters in the A array to the same characters in the B array. A reduced A' array is computed to identify each unique character in the A array and a reduced C' array is computed to contain every s.sup.th entry of the C array. The B array is segmented into blocks of size s. During a search, the A' and C' arrays are used to index the B array to reconstruct any desired row from the matrix of rotations. Through this representation, the matrix of rotations can thus be used as a conventional sorted list for pattern matching or information retrieval applications. A data structure containing only the A', B, and C' has very little memory overhead. The B array contains the same number of characters as the original data string, and can be compressed in a block wise manner to reduce its size. The A' array is a fixed size equal to the size of the alphabet used to construct the data string, and the C' array is variable size according to the relationship n/s, where n is the number of characters in the data string and s is the size of the blocks of the B array. Accordingly, the data structure enables a tradeoff between access speed and memory overhead, the product of which is constant with respect to block size s.

35 Claims, 8 Drawing figures

WEST

Generate Collection

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L6: Entry 30 of 79

File: USPT

Jan 4, 2000

US-PAT-NO: 6012054

DOCUMENT-IDENTIFIER: US 6012054 A

TITLE: Database system with methods for performing cost-based estimates using spline histograms

DATE-ISSUED: January 4, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Seputis; Edwin Anthony	Oakland	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Sybase, Inc.	Emeryville	CA			02

APPL-NO: 8/ 956631 [PALM]

DATE FILED: October 23, 1997

PARENT-CASE:

RELATED APPLICATIONS The present application claims the benefit of priority from commonly-owned provisional application Ser. No. 60/057,408, filed Aug. 29, 1997 and now pending, entitled DATABASE SYSTEM WITH METHODS FOR PERFORMING COST-BASED ESTIMATES USING SPLINE HISTOGRAMS, the disclosure of which is hereby incorporated by reference.

INT-CL: [6] G06 F 17/30

US-CL-ISSUED: 707/3; 707/1, 707/2, 704/267, 704/258, 704/260, 395/500.02, 395/500.03, 395/500.23, 364/474.29, 364/474.31, 364/468.03, 364/474.02

US-CL-CURRENT: 707/3; 700/146, 700/187, 700/189, 700/97, 703/2, 704/258, 704/260, 704/267, 707/1, 707/2, 716/1

FIELD-OF-SEARCH: 707/3, 707/1, 707/2, 364/474.29, 364/474.31, 364/193, 364/474.02, 364/167.09, 364/468.03, 704/267, 704/258, 704/260, 395/500.03, 395/500.02, 395/500.23

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4956774</u>	September 1990	Shibamiya et al.	364/200
<input type="checkbox"/>	<u>5384893</u>	January 1995	Hutchins	704/267
<input type="checkbox"/>	<u>5552995</u>	September 1996	Sebastian	364/468.03
<input type="checkbox"/>	<u>5689696</u>	November 1997	Gibbons et al.	707/1
<input type="checkbox"/>	<u>5732107</u>	March 1998	Phillips et al.	375/296
<input type="checkbox"/>	<u>5778353</u>	July 1998	Schiefer et al.	707/2
<input type="checkbox"/>	<u>5799311</u>	August 1998	Agrawal et al.	707/102
<input type="checkbox"/>	<u>5822456</u>	October 1998	Reed et al.	382/232
<input type="checkbox"/>	<u>5838579</u>	November 1998	Olson et al.	364/488
<input type="checkbox"/>	<u>5903476</u>	May 1999	Mauskar et al.	395/500.27

OTHER PUBLICATIONS

Poosala, V., Ioannidis, Y., Haas, P., and Shekita, E., "Improved Histograms for Selectivity Estimation of Range Predicates," ACM SIGMOD '96, Montreal, Canada, 1996, pp. 294-305.

Piatetsky-Shapiro, G. and Connell, C., "Accurate Estimation of the Number of Tuples Satisfying A Condition," ACM, 1984, pp. 256-276.

Mannino, M., Chu, P., and Sager, T., "Statistical Profile Estimation in Database Systems," ACM Computing Surveys, vol. 20, No. 3, Sep. 1988, pp. 191-221.

ART-UNIT: 277

PRIMARY-EXAMINER: Fetting; Anton W.

ASSISTANT-EXAMINER: Corrielus; Jean M.

ATTY-AGENT-FIRM: Smart; John A.

ABSTRACT:

Database system and methods are described for improving execution speed of database queries (e.g., for decision support) by provides methods employing spline histograms for improving the determination of selectivity estimates. The general approach improves histogram-based cost estimates as follows. The constant associated with a predicate (e.g., in $r.a > 5$, the constant is "5") is used to do a binary search in an array of histogram boundary values, for determining a particular histogram cell. Once a cell has been found, the system employs interpolation to find out how much of the cell has been selected. Once this interpolation value is found, it is used with a cell weighting and a spline value or weighting to estimate the selectivity of the predicate value, which takes into account how data values are distributed within the cell. As a result of increased accuracy of estimates, the system can formulate better query plans and, thus, provides better performance.

32 Claims, 8 Drawing figures

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L8 and pre-compute same list	0

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Search:[Refine Search](#)[Recall Text](#)[Clear](#)**Search History****DATE:** **Thursday, April 11, 2002** [Printable Copy](#) [Create Case](#)

Set Name **Query**
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Hit Count **Set Name**
result set

DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR

<u>L12</u>	L8 and pre-compute same list	0	<u>L12</u>
<u>L11</u>	L9 and pre-compute same list	0	<u>L11</u>
<u>L10</u>	L9 and pre-comput\$	0	<u>L10</u>
<u>L9</u>	L8 and least same value	49	<u>L9</u>
<u>L8</u>	find\$ same queries same great\$ same value	79	<u>L8</u>
<u>L7</u>	L1 and l5	11	<u>L7</u>
<u>L6</u>	l4 and l5	3	<u>L6</u>
<u>L5</u>	((707/5)!.CCLS.)	813	<u>L5</u>
<u>L4</u>	L3 and least same value	60	<u>L4</u>
<u>L3</u>	L1 and great\$ same value	102	<u>L3</u>
<u>L2</u>	L1 and greatest-value	0	<u>L2</u>
<u>L1</u>	find\$ near strings	293	<u>L1</u>

END OF SEARCH HISTORY

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L3: Entry 2 of 3

File: USPT

Jun 30, 1998

US-PAT-NO: 5774588

DOCUMENT-IDENTIFIER: US 5774588 A

TITLE: Method and system for comparing strings with entries of a lexicon

DATE-ISSUED: June 30, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Li; Liang	Monroe	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
United Parcel Service of America, Inc.	Atlanta	GA				02

APPL-NO: 8/ 477481 [PALM]

DATE FILED: June 7, 1995

INT-CL: [6] G06 K 9/36, G06 K 9/72

US-CL-ISSUED: 382/230; 382/229

US-CL-CURRENT: 382/230; 382/229

FIELD-OF-SEARCH: 382/229, 382/230, 382/231

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

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<input type="checkbox"/>	<u>3969698</u>	July 1976	Bollinger et al.	340/146.3WD
<input type="checkbox"/>	<u>3995254</u>	November 1976	Rosenbaum	340/146.3WD
<input type="checkbox"/>	<u>4010445</u>	March 1977	Hoshino	340/146.3WD
<input type="checkbox"/>	<u>4058795</u>	November 1977	Balm	340/146.3WD
<input type="checkbox"/>	<u>4754489</u>	June 1988	Bokser	382/229
<input type="checkbox"/>	<u>4771385</u>	September 1988	Egami et al.	364/419
<input type="checkbox"/>	<u>4799271</u>	January 1989	Nagasawa et al.	382/229
<input type="checkbox"/>	<u>4903206</u>	February 1990	Itoh et al.	364/419
<input type="checkbox"/>	<u>4979227</u>	December 1990	Mittelbach et al.	382/229
<input type="checkbox"/>	<u>5050218</u>	September 1991	Ikedo et al.	382/100
<input type="checkbox"/>	<u>5062143</u>	October 1991	Schmitt	382/229
<input type="checkbox"/>	<u>5133023</u>	July 1992	Bokser	382/229
<input type="checkbox"/>	<u>5136289</u>	August 1992	Yoshida et al.	341/67
<input type="checkbox"/>	<u>5261009</u>	November 1993	Bokser	382/229
<input type="checkbox"/>	<u>5276741</u>	January 1994	Aragon	382/229
<input type="checkbox"/>	<u>5325444</u>	June 1994	Cass et al.	382/229
<input type="checkbox"/>	<u>5329609</u>	July 1994	Sanada et al.	395/2.6

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0 518 496	December 1992	EPX	

OTHER PUBLICATIONS

William B. Cavnar and Alan J. Vayda, Using Superimposing Coding of N-gram Lists for Efficient Inexact Matching, Environmental Research Institute of Michigan, pp. 253-267, 480-493.

Owolabi et al., "Fast Approximate String Matching," Software--Practice and Experience, vol. 18, No. 4, pp. 387-393 (Apr. 1988).

Takahashi et al., "A Spelling Correction Method and Its Application to an OCR System," Pattern Recognition, vol. 23, No. 3/4, pp. 363-377 (Jan. 1990).

Zobel et al., "Finding Approximate Matches in Large Lexicons," Software--Practice and Experience, vol. 25, No. 3, pp. 331-345 (Mar. 1995).

William J. Masek and Michael S. Paterson, "A Faster Algorithm Computing String Edit Distances," of Journal Computer And System Sciences, 20, 18-13 (1980), pp. 18-31.

Roy Lowrance and Robert A. Wagner, "An Extension of the String-to-String Correction Problem," Journal of the Association for Computing Machinery, vol. 22, No. 2, Apr. 1975 pp. 177-183.

Robert A. Wagner and Michael J. Fischer, "The String-to-String Correction Problem," Journal of Association for Computing Machinery, vol. 21, No. 1, Jan. 1974, pp. 168-173.

Sun Wu and Udi Manber, "AGREP--A Fast Approximate Pattern-Matching Tool," Dept. of Computer Science University of Arizona.

Edward M. Riseman, "A Contextual Postprocessing System For Error Correction Using Binary N-Grams" IEE Transactions On Computers, vol. C-23, No. 5, May 1974, pp. 480, 481-493.

ART-UNIT: 266

PRIMARY-EXAMINER: Johns; Andrew

ASSISTANT-EXAMINER: Davis; Monica S.

ATTY-AGENT-FIRM: Jones & Askew, LLP

ABSTRACT:

A system and method for more efficiently comparing an unverified string to a lexicon, which filters the lexicon through multiple steps to reduce the number of entries to be directly compared with the unverified string. The method begins by preparing the lexicon with an n-gram encoding, partitioning and hashing process, which can be accomplished in advance of any processing of unverified strings. The unknown is compared first by partitioning and hashing it in the same way to reduce the lexicon in a computationally inexpensive manner. This is followed by an encoded vector comparison step, and finally by a direct string comparison step, which is the most computationally expensive. The reduction of the lexicon is accomplished without arbitrarily eliminating any large portions of the lexicon that might contain relevant candidates. At the same time, the method avoids the need to compare the unverified string directly or indirectly with all the entries in the lexicon. The final candidate list includes only highly possible and ranked candidates for the unverified string, and the size of the final list is adjustable.

17 Claims, 8 Drawing figures

WEST**End of Result Set**

Generate Collection

Print

L3: Entry 3 of 3

File: USPT

Jul 1, 1997

US-PAT-NO: 5644657

DOCUMENT-IDENTIFIER: US 5644657 A

TITLE: Method for locating and displaying information in a pointer-based computer system

DATE-ISSUED: July 1, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Capps; Stephen P.	San Carlos	CA		
Meier; John R.	Cupertino	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Apple Computer, Inc.	Cupertino	CA			02

APPL-NO: 8/ 456747 [PALM]

DATE FILED: June 1, 1995

PARENT-CASE:

This application is a continuation of a co-pending application Ser. No. 08/001,121, filed Jan. 5, 1993 which in turn is a continuation-in-part of application Ser. No. 07/889,660, filed May 27, 1992, and both of which are assigned to the assignee of the present application, and both of which are hereby incorporated by reference in their entirety.

INT-CL: [6] G06 K 9/72

US-CL-ISSUED: 382/229

US-CL-CURRENT: 382/229

FIELD-OF-SEARCH: 382/181, 382/182, 382/187, 382/199, 382/228, 382/229, 382/309, 382/155, 382/317, 345/121, 395/144-148, 395/155, 395/161

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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<input type="checkbox"/>	<u>4542378</u>	September 1985	Suganuma et al.	340/734
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<input type="checkbox"/>	<u>4797946</u>	January 1989	Katsuta et al.	382/317
<input type="checkbox"/>	<u>5038382</u>	August 1991	Lipscomb	382/187
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<input type="checkbox"/>	<u>5452371</u>	September 1995	Bozinovic et al.	382/187
<input type="checkbox"/>	<u>5463696</u>	October 1995	Beernink et al.	382/186
<input type="checkbox"/>	<u>5479596</u>	December 1995	Capps et al.	395/148
<input type="checkbox"/>	<u>5500937</u>	March 1996	Thompson-Rohrlich	395/161
<input type="checkbox"/>	<u>5528743</u>	June 1996	Tou et al.	395/148

OTHER PUBLICATIONS

O'Connor, Rory J., "Apple Banking on Newton's Brain", San Jose Mercury News, Wednesday, Apr. 22, 1992 makes conjectures concerning anticipated features of an unreleased pen-based computer.

Weiman, Liza and Moran, Tom, "A Step toward the Future", Macworld, Aug. 1992, pp. 129-131.

Soviero, Marcelle M., "Your World According to Newton", Popular Science, Sep. 1992, pp. 45-49.

Abatemarco, Fred, "From the Editor", Popular Science, Sep. 1992, p. 4.

A brochure describing the "PenBook" from Slate Corporation discusses one type of book reading system. It is believed that the PenBook system was released in about 1991.

Macintosh User's Guide, Apple Computer, Inc., 1991, pp. 114-117.

ART-UNIT: 266

PRIMARY-EXAMINER: Couso; Jose L.

ATTY-AGENT-FIRM: Hickman Beyer & Weaver

ABSTRACT:

A user interface is disclosed that facilitates easy find and display operations that search through the memory of a pointer based computing system. The user interface includes searching methods that are particularly well suited for use in a computer system in which the contents of the memory are divided into a plurality of searchable application files that are each capable of containing a plurality of records. In one aspect of the invention an improved find dialog box is disclosed. In another aspect, a method of selecting local versus global searches together with a method of conducting the chosen search and processing user inputs in response to the search results is disclosed. Additionally, an improved interface for displaying the results of various searches is described.

39 Claims, 15 Drawing figures

WEST

Generate Collection



Print

L8: Entry 54 of 79

File: USPT

Dec 8, 1998

US-PAT-NO: 5848408

DOCUMENT-IDENTIFIER: US 5848408 A

TITLE: Method for executing star queries

DATE-ISSUED: December 8, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jakobsson; Hakan	San Francisco	CA		
Ozbutun; Cetin	San Carlos	CA		
Waddington; William H.	Foster City	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Oracle Corporation	Redwood Shores	CA			02

APPL-NO: 8/ 808621 [PALM]
DATE FILED: February 28, 1997

INT-CL: [6] G06 F 17/30

US-CL-ISSUED: 707/3; 707/2
US-CL-CURRENT: 707/3; 707/2

FIELD-OF-SEARCH: 707/2, 707/3, 707/4, 707/5

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ Search Selected☐ Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>5249262</u>	September 1993	Baule	395/66
<input type="checkbox"/>	<u>5367675</u>	November 1994	Cheng et al.	395/600
<input type="checkbox"/>	<u>5546576</u>	August 1996	Cochrane et al.	395/600
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<input type="checkbox"/>	<u>5557791</u>	September 1996	Cheng et al.	395/600
<input type="checkbox"/>	<u>5668987</u>	September 1997	Schneider	707/3
<input type="checkbox"/>	<u>5761657</u>	June 1998	Hoang	707/4

OTHER PUBLICATIONS

Zhao et al. "Array-Based Evaluation of Multi-Dimensional Queries in Object-Relational Database Systems" IEEE, pp. 241-249, Feb. 1998.
Haas "Sampling-Based Selectivity Estimation for Joins Using Augmented Frequent Value Statistics" IEEE, pp. 522-531, Jan. 1996.

Baekgaard et al. "Incremental Computation of Nested Relational Query Expressions"
ACM Transactions on Database Systems, vol. 20, No. 2, pp. 111-148, Jun. 1995.
Christophides et al. "Querying Structured Documents with Hypertext Links using
OODBMS" ECHT '94 Proceedings, pp. 188-197, Sep. 1994.

ART-UNIT: 276

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Wallace, Jr.; Michael J.

ATTY-AGENT-FIRM: McDermott, Will & Emery

ABSTRACT:

A method and apparatus for processing star queries is provided. According to the method, a star query is transformed by adding to the star query subqueries that are not in the query. The subqueries are generated based on join predicates and constraints on dimension tables that are contained in the original query. The subqueries are executed, and the values returned by the subqueries are used to access one or more bitmap indexes built on columns of the fact table. The bitmaps retrieved for the values returned by each subquery are merged to create one subquery bitmap per subquery. An AND operation is performed on the subquery bitmaps, and the resulting bitmap is used to determine which data to retrieve from the fact table.

20 Claims, 5 Drawing figures

WEST

Generate Collection

Print

L8: Entry 57 of 79

File: USPT

Jul 14, 1998

US-PAT-NO: 5781896

DOCUMENT-IDENTIFIER: US 5781896 A

TITLE: Method and system for efficiently performing database table aggregation using an aggregation index

DATE-ISSUED: July 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dalal; Ketan	Seattle	WA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Microsoft Corporation	Redmond	WA			02

APPL-NO: 8/ 636235 [PALM]

DATE FILED: April 23, 1996

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation of U.S. patent application No. 08/268,231, filed Jun. 30, 1994, now U.S. Pat. No. 5,537,589.

INT-CL: [6] G06 F 17/30

US-CL-ISSUED: 707/2; 707/1, 707/3, 707/101, 707/102

US-CL-CURRENT: 707/2; 707/1, 707/101, 707/102, 707/3

FIELD-OF-SEARCH: 395/613, 395/602, 395/603, 395/612, 707/2, 707/3, 707/1, 707/101, 707/102

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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<input type="checkbox"/>	<u>5404510</u>	April 1995	Smith et al.	395/600
<input type="checkbox"/>	<u>5537589</u>	July 1996	Dalal	395/600
<input type="checkbox"/>	<u>5551031</u>	August 1996	Cheng et al.	395/600
<input type="checkbox"/>	<u>5557791</u>	September 1996	Cheng et al.	395/600
<input type="checkbox"/>	<u>5594898</u>	January 1997	Dalal et al.	395/602

OTHER PUBLICATIONS

Elmasri et al., "Fundamentals of Database Systems", Department of Computer Science, University of Houston, 1989, pp. 161-162, 189-193.

ART-UNIT: 271

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Homere; Jean R.

ATTY-AGENT-FIRM: Seed and Berry LLP

ABSTRACT:

A method and system for efficiently performing database table aggregation is provided. In a preferred embodiment, an aggregation facility efficiently aggregates a source table using indices on an aggregated column of the source table and a grouping column of the source table. The facility uses the index on the aggregated column to identify the contents of the aggregated column in each row of the source table. The facility further uses information derived from the index on the grouping column to identify the contents of the grouping column in each row of the source table. For each row of the source table, the facility aggregates the identified aggregated column contents into a result value for the identified grouping column contents. In a further preferred embodiment, the facility generates a relation mapping from source table row to grouping column, which the facility uses to identify the contents of the grouping column in each row of the source table. In a further preferred embodiment, the facility may be used to perform multiple-level aggregations, as well as aggregations in which there are multiple grouping columns, multiple aggregated columns, and/or multiple result columns.

9 Claims, 12 Drawing figures

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L8: Entry 33 of 79

File: USPT

May 16, 2000

US-PAT-NO: 6064999

DOCUMENT-IDENTIFIER: US 6064999 A

TITLE: Method and system for efficiently performing database table aggregation using a bitmask-based index

DATE-ISSUED: May 16, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dalal; Ketan	Seattle	WA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Microsoft Corporation	Redmond	WA			02

APPL-NO: 9/ 060860 [PALM]

DATE FILED: April 15, 1998

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is a continuation application of U.S. patent application Ser. No. 08/636,235, filed Apr. 23, 1996, and issued Jul. 14, 1998 as U.S. Pat. No. 5,781,896, which is a continuation application of U.S. patent application Ser. No. 08/268,231, filed Jun. 30, 1994, and issued Jul. 16, 1996 as U.S. Pat. No. 5,537,589.

INT-CL: [7] G06 F 17/30

US-CL-ISSUED: 707/2; 707/3, 707/102

US-CL-CURRENT: 707/2; 707/102, 707/3

FIELD-OF-SEARCH: 707/2, 707/3, 707/1, 707/102

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4497039</u>	January 1985	Kitakami et al.	364/900
<input type="checkbox"/>	<u>5033009</u>	July 1991	Dubnoff	364/523
<input type="checkbox"/>	<u>5231577</u>	July 1993	Koss	364/419
<input type="checkbox"/>	<u>5241648</u>	August 1993	Cheng et al.	395/600
<input type="checkbox"/>	<u>5261093</u>	November 1993	Asmuth	395/600
<input type="checkbox"/>	<u>5272628</u>	December 1993	Koss	364/419.19
<input type="checkbox"/>	<u>5367677</u>	November 1994	Stanfill	395/600
<input type="checkbox"/>	<u>5404510</u>	April 1995	Smith et al.	395/600
<input type="checkbox"/>	<u>5537589</u>	July 1996	Dalal	395/600
<input type="checkbox"/>	<u>5551031</u>	August 1996	Cheng et al.	395/600
<input type="checkbox"/>	<u>5557791</u>	September 1996	Cheng et al.	395/600
<input type="checkbox"/>	<u>5594898</u>	January 1997	Dalal et al.	395/602

OTHER PUBLICATIONS

Elmasri, Ramez et al., Fundamentals of Database Systems, The Benjamin/Cummings Publishing Company, Inc., Redwood City, CA. 1989, pp. 101, 161-162, 189-193, 201-202.

ART-UNIT: 277

PRIMARY-EXAMINER: Homere; Jean R.

ATTY-AGENT-FIRM: Jones & Askew, LLP

ABSTRACT:

A method and system for efficiently performing database table aggregation is provided. In a preferred embodiment, an aggregation facility efficiently aggregates a source table using indices on an aggregated column of the source table and a grouping column of the source table. The facility uses the index on the aggregated column to identify the contents of the aggregated column in each row of the source table. The facility further uses information derived from the index on the grouping column to identify the contents of the grouping column in each row of the source table. For each row of the source table, the facility aggregates the identified aggregated column contents into a result value for the identified grouping column contents. In a further preferred embodiment, the facility generates a relation mapping from source table row to grouping column, which the facility uses to identify the contents of the grouping column in each row of the source table. In a further preferred embodiment, the facility may be used to perform multiple-level aggregations, as well as aggregations in which there are multiple grouping columns, multiple aggregated columns, and/or multiple result columns.

13 Claims, 12 Drawing figures

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L4: Entry 24 of 60

File: USPT

Jan 6, 1998

US-PAT-NO: 5706496

DOCUMENT-IDENTIFIER: US 5706496 A

TITLE: Full-text search apparatus utilizing two-stage index file to achieve high speed and reliability of searching a text which is a continuous sequence of characters

DATE-ISSUED: January 6, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Noguchi; Naohiko	Yokohama			JPX
Kanno; Yuji	Tokyo			JPX
Kurachi; Kazuaki	Tokyo			JPX
Inaba; Mitsuaki	Tokyo			JPX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Matsushita Electric Industrial Co., Ltd.	Osaka			JPX		03

APPL-NO: 8/ 601656 [PALM]

DATE FILED: February 14, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-056021	March 15, 1995

INT-CL: [6] G06 F 17/30

US-CL-ISSUED: 395/603; 395/605

US-CL-CURRENT: 707/3; 707/5

FIELD-OF-SEARCH: 395/603, 395/605, 395/606

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4495566</u>	January 1985	Dickinson et al.	364/200
<input type="checkbox"/>	<u>4674066</u>	June 1987	Kucera	364/900
<input type="checkbox"/>	<u>5519857</u>	May 1996	Kato et al.	395/603
<input type="checkbox"/>	<u>5600835</u>	February 1997	Garland et al.	395/605
<input type="checkbox"/>	<u>5606690</u>	February 1997	Hunter et al.	395/605

OTHER PUBLICATIONS

"Information Retrieval; Data Structures and Algorithms" by B. Frakes et al; Prentice Hall; pp., 29-43.

"A Fast Full-Text Search Method for Japanese Text Database" by C. Kikuchi; The Transactions of the Institute of Electronics, Information and Communication Engineering, vol. J75-D-I, No. 9; 1992; pp., 836-846 (w/English translation).

ART-UNIT: 237

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Min; Donald

ATTY-AGENT-FIRM: Lowe, Price, LeBlanc & Becker

ABSTRACT:

A new type of text search apparatus, capable of finding all occurrence positions of a search string that is an arbitrary character string, within a text which is written as a continuous sequence of characters, utilizes for text position reference purposes in an index file, words which each occur (at least once within the text) as the maximum length word, referred to as an extension word, among a set of arbitrarily predefined dictionary words extending from a specific character position. Each such occurrence of a word as an extension word defines one of a set of text position elements, with that set covering all of the character positions of the text. The index file also includes a table which relates each of the extension words to the respective positions at which each of the partial character strings of the word occur within the word. Each occurrence of an arbitrary search string within the text can thereby be expressed as either a partial character string within a single text position element, or as a sequence of partial character strings within a set of sequentially occurring text position elements, so that all such occurrences can be found by utilizing the index file.

19 Claims, 74 Drawing figures

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L4: Entry 32 of 60

File: USPT

Oct 8, 1996

US-PAT-NO: 5564058

DOCUMENT-IDENTIFIER: US 5564058 A

TITLE: Stored string data with encoded data units from subranges of values that indicate search information

DATE-ISSUED: October 8, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kaplan; Ronald M.	Palo Alto	CA		
Kay; Martin	Menlo Park	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Xerox Corporation	Stamford	CT			02

APPL-NO: 8/ 450240 [PALM]

DATE FILED: May 25, 1995

PARENT-CASE:

This is a continuation, of application Ser. No. 07/855,129, filed Mar. 18, 1992, now U.S. Pat. No. 5,450,598 which was a continuation of application Ser. No. 07/619,821, filed Nov. 29, 1990, now abandoned which was a continuation of application Ser. No. 07/274,701, filed Nov. 15, 1988 now abandoned, which was a continuation of application Ser. No. 06/814,146, filed Dec. 27, 1985 now abandoned.

INT-CL: [6] G06 F 9/00

US-CL-ISSUED: 395/800; 364/419.12, 364/943.42, 364/DIG.2, 364/419.13

US-CL-CURRENT: 707/6

FIELD-OF-SEARCH: 395/800, 364/419.12, 364/419.13, 364/943.42, 364/DIG.2

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4450520</u>	May 1984	Hollaar et al.	395/550
<input type="checkbox"/>	<u>4758955</u>	July 1988	Chen	364/419.12
<input type="checkbox"/>	<u>4771385</u>	September 1988	Egami et al.	364/419.13
<input type="checkbox"/>	<u>4782464</u>	November 1988	Gray et al.	364/419.12
<input type="checkbox"/>	<u>4783761</u>	November 1988	Gray et al.	364/419.12
<input type="checkbox"/>	<u>5051947</u>	September 1991	Messenger et al.	395/800

ART-UNIT: 232

PRIMARY-EXAMINER: Bowler; Oyssa H.
ASSISTANT-EXAMINER: Harrity; John

ABSTRACT:

An FSM data structure is encoded by generating a transition unit of data corresponding to each transition which leads ultimately to a final state of the FSM. Information about the states is included in the transition units, so that the encoded data structure can be written without state units of data. The incoming transition units to a final state each contain an indication of finality. The incoming transition units to a state which has no outgoing transition units each contain a branch ending indication. The outgoing transition units of each state are ordered into a comparison sequence for comparison with a received element, and all but the last outgoing transition unit contain an alternative indication of a subsequent alternative outgoing transition. The indications are incorporated with the label of each transition unit into a single byte, and the remaining byte values are allocated among a number of pointer data units, some of which begin full length pointers and some of which begin pointer indexes to tables where pointers are entered. The pointers may be used where a state has a large number of incoming transitions or where the block of transition units depending from a state is broken down to speed access. The first outgoing transition unit of a state is positioned immediately after one of the incoming transitions so that it may be found without a pointer. Each alternative outgoing transition unit is stored immediately after the block beginning with the previous outgoing transition unit so that it may be found by proceeding through the transition units until the number of alternative bits and the number of branch ending bits balance.

16 Claims, 15 Drawing figures

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END OF SEARCH HISTORY